

WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
OF THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DEPARTMENT NEWS

TONGUE RIVER DAM DEDICATION CEREMONY HELD ON JULY 1

By Jim Domino

THE OFFICIAL DEDICATION CEREMONY TO COMMEMORATE THE COMPLETION OF THE NEW TONGUE RIVER DAM TOOK PLACE ON THURSDAY, JULY 1. Over two hundred people attended the 1½ hour-long event, which included an opening prayer by a Northern Cheyenne Tribal Elder; speeches by dignitaries from the Northern Cheyenne Tribe, Department of Natural Resources and Conservation (DNRC), and federal agency staff; the unveiling of a new commemorative plaque; and the ceremonial first delivery of water to the Tribe. A catered lunch was served after the ceremony.

Governor Marc Racicot was the keynote speaker at the dedication. Other speakers included DNRC Director Bud Clinch, Water Resources Division Administrator Jack Stults, State Water Projects Bureau Chief Glen McDonald, Regional Director of the U.S. Bureau of Reclamation Maryanne Bach, Dave Pennington from the U.S. Bureau of Indian Affairs, Art Hayes, Jr., President of the Tongue River Water Users Association, and Ernie Robinson from the Northern Cheyenne Tribal Council.

The Tongue River Dam Project included rehabilitation of the 60-year-old earthen dam, which was heavily damaged in a 100-year flood event in 1978. In 1980, the U.S. Army Corps of Engineers identified the dam as unsafe due to its inability to handle this type of flood. For many years, the dam was operated at decreased levels to provide an extra margin of safety for people and property downstream.

The sponsorship of the project involved a three-way partnership in funding between the Northern Cheyenne Tribe, the U.S. Bureau of Reclamation, and the State of Montana. Sixty-five percent of the total costs were paid for by the federal government, with the state and the Tongue River Water Users Association paying for the remainder.

Construction on the project began in August of 1996. The construction occurred in three

the United States in terms of the total volume of roller-compacted concrete used, (58,000 cubic yards), which is a nationally notable accomplishment. Phase 3 included the installation of the new primary spillway and outlet works and the rehabilitation of the existing outlet works.

Fish and wildlife enhancement projects include the Tongue & Yellowstone diversion structure and fish louver, the 8,900-acre Hirsh Ranch conservation easement, and



Governor Marc Racicot speaks at the Tongue River Dam Dedication.

Photo by Cindy Forgey

main phases. Phase 1 involved the construction of a new access road to the dam; aggregate mining, processing, and hauling; and site preparation. Phase 2 was the construction of the new roller-compacted concrete emergency spillway. The emergency spillway at the Tongue River Dam now stands as the largest spillway of its kind in

the 957-acre Badger Creek conservation easement. Mitigation involving the Decker Coal Mine continues, with work to begin soon on controlling the additional seepage into the mine pits. The Montana Department of Fish, Wildlife and Parks (DFWP) is planning on new fish stocking in the Tongue River this fall for fisheries mitigation. The

(Continued on page 2)

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION — WATER RESOURCES DIVISION

"To provide the most benefit, through the best use, of the state's water resources for the people of Montana."

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(Dedication continued from page 1)

reconstruction of Tongue River Reservoir State Park, which occurred under a separate contract, was one of the major benefits of the project. The new park facilities include a larger boat ramp and developed day use and camping areas. A new interpretive kiosk was constructed by the U.S. Bureau of Reclamation, and a new concession building will be constructed by DFWP in the future, both under separate contracts. The new park facilities will greatly enhance the opportunities for recreationists and provide a high quality experience for Montanans and our out-of-state guests.

As well as addressing safety and structural deficiencies, the completion of the project served to fulfill the obligations made to the Northern Cheyenne Tribe in a 1991 compact between the Tribe and the State of Montana to provide up to an additional 20,000 acre-feet of water annually.

The project is currently being considered for three prestigious

national engineering awards and has been described five times in national journals. The project's innovative concepts also resulted in several million dollars in construction cost savings and cut nearly two years off the construction schedule.

Because of the cooperation among the contractors, the state, and the Northern Cheyenne Tribe, there was not a single incident of a labor dispute slowing the work. These outstanding accomplishments were realized only because the Tongue River Team demonstrated an exemplary level of dedication and commitment to this demanding project. The \$48

million project was designed by a Montana consulting firm, with construction completed entirely by Montana contractors.



Tongue River Team: Governor's Award Ceremony.

In September of this year, DNRC's Tongue River Team was awarded the 1999 Governor's Award for Excellence in Performance for their work on the Tongue River Dam Project. 🍀

Controlled Groundwater Area Proposal Aims to Protect Existing Water Users and Resources

By Nancy Andersen

THE WATER RESOURCES DIVISION OF DNRC HAS PETITIONED, ON ITS OWN MOTION, TO CREATE A CONTROLLED GROUNDWATER AREA IN SOUTHEASTERN MONTANA THAT WILL APPLY TO WELLS DRILLED FOR COAL BED METHANE (CBM) EXTRACTION. This action is in response to potential large-scale CBM development in Montana. During the past few years, extensive CBM development has occurred from coal-bearing strata within the Powder River Basin geologic structure in Wyoming - approximately 3,000 wells are now in production. Some CBM development has recently occurred in Montana near Decker. The Powder River Basin geologic structure and associated coal-bearing strata extend north into southeastern Montana, and the Water Resources Division expects that CBM development will likely extend farther north into southeastern Montana in the near future. The Water Resources Division and the Montana Board of Oil and Gas Conservation are teaming up to develop a process that will provide CBM development guidelines, as well as protection for existing water uses and the groundwater resources.

How Is Coal Bed Methane Extracted?

Methane gas is held in coal seams by water pressure. CBM technology requires reducing water pressure in the coal beds, which also lowers groundwater levels. Wells are typically placed at regular intervals over large areas covering many square miles, and they are pumped continuously to lower water pressure in the coal bed. When the pressure is lowered to an optimal level, methane gas is released from the coal and can be extracted from the well.

In southeastern Montana, the coal seams that would be targeted are approximately 300, 500, and 800 feet below the ground's surface.

The same coal beds that are targeted for methane production are important regional aquifers in water-scarce southeastern Montana. In fact, these coal aquifers are often the only practical source of fresh water for domestic, stock, and agricultural use by the people in the area.

How Is CBM Production Regulated?

Multi-Agency Responsibilities
Three different state agencies have

jurisdiction over aspects of this technology. The Montana Board of Oil and Gas Conservation has primary regulatory responsibility over the development of CBM in the same way it regulates other oil and gas development in Montana. The Water Resources Division administers use of the state's water and protects the groundwater resource and the rights of senior water users. The Department of Environmental Quality (DEQ) regulates the discharge of water and other water quality concerns.

Production of CBM

The Board of Oil and Gas Conservation authorizes the exploration and production phases of CBM extraction. It plans to adopt general development procedures for CBM activities in December 1999 and will additionally adopt specific requirements for development of production fields as applications are received. These field requirements will be case-specific to the particular development.

Withdrawal of Water

After extensive research into the CBM extraction technology, the

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(Proposal continued from page 2)

Water Resources Division of DNRC has determined that the activity does not require a water right. The water is a by-product which the developer does not wish to control or protect. The developer would not "call" junior water right holders if water were not available. Furthermore, the water is not being put to beneficial use as described by Montana law.

However, the controlled groundwater statutes, *Montana Code Annotated* (MCA) 85-2-506 et seq., provide for the establishment of a controlled groundwater area for a variety of reasons. In this case, the Water Resources Division determined, as stated in 85-2-506 (b), "that excessive groundwater withdrawals are very likely to occur in the near future because of consistent and significant increases in withdrawals from within the groundwater area." By "excessive," the department means that water levels in targeted aquifers could be reduced near project areas for long periods of time in a water-scarce area.

Crediting this controlled groundwater area will require that the Board of Oil and Gas Conservation administer special conditions in addition to its normal regulatory requirements, as provided in MCA 85-2-510. These special conditions will be targeted to protect existing water uses and require that the groundwater resource be monitored during CBM development.

Surface Uses of CBM Well Water

Beneficial uses of water produced from CBM operations, such as for stock ponds, wildlife ponds, or irrigation, must have a water right issued by the Water Resources Division, DNRC, as provided by law.

Discharge or Disposal of Water

Since water withdrawn during CBM development is not otherwise consumed, it must be discharged in some manner. Any applicable water discharge permits must be obtained, and water disposal requirements met, before groundwater may be discharged, re-injected, or otherwise disposed. Water discharge permits may include the Montana Pollutant Discharge Elimination System (MPDES) permit from the DEQ, for discharge to surface water, and the Underground Injection Control (UIC) permit from the Board of Oil and Gas Conservation, for discharge or re-injection to groundwater.

To What Will the Controlled Groundwater Area Apply?

The controlled groundwater area will apply only to wells drilled to extract CBM and will require conditions as summarized below, in addition to the usual requirements of the Montana Board of Oil and Gas Conservation.

Standards for Permitting, Drilling, and Producing Coal Bed Methane Wells

The Board of Oil and Gas Conservation will adopt general standards in December 1999. It will adopt additional requirements for field development proposals beyond initial test wells, including submission of development plans; maps of the targeted coal bed; an assessment of existing wells, springs, and streamflow that could be impacted by the operation; and means to mitigate water resource impacts. At a minimum, CBM developers will be required to offer a Water Source Mitigation Contract to all water right holders within a half-mile radius of CBM development. An application for establishment of each CBM production field will be heard by the Board of Oil and Gas Conservation and approval of field rules may include specific requirements and restrictions beyond those established under the general operating standards.

Technical Advisory Committee

The Water Resources Division will designate a Technical Advisory Committee (TAC) with specific expertise in coal aquifer hydrology and shallow groundwater systems. The committee will review groundwater data and scientific evidence related to the Powder River Basin Controlled Groundwater Area and advise the agencies on administration of the area.

The committee will consist of qualified scientists with experience related to the hydrogeology of coal aquifers and CBM extraction operations. The appointments shall be to ensure, to the extent possible, that the committee includes members with expertise in hydrogeology, water quality, and CBM extraction systems and operations.

The TAC will periodically review groundwater data gathered from CBM development. The TAC will prepare an annual report each year of its findings regarding the impact to the groundwater resource from CBM activities and any mitigation recommendations it may develop. The TAC may submit reports more often if it finds it appropriate. Additionally, the TAC will make recommendations to the Board of Oil and Gas Conservation

regarding development of specific groundwater characterization, monitoring, and reporting requirements for field developments.

Groundwater Characterization, Monitoring, and Reporting

Hydrologic conditions in the targeted coal beds must be assessed prior to field development. Specific requirements of the field rules will dictate that groundwater pressure is monitored in appropriate locations using dedicated monitoring wells.

The specific requirements for each production field will be developed with consideration of recommendations from the TAC. The procedures will include dedicated groundwater monitoring wells outside of and surrounding the production field. Dedicated groundwater monitoring wells must be placed in the next aquifer above and below the targeted coal seam, if applicable, within the production field. Also, as a minimum requirement, at least one 24-hour aquifer test must be conducted using at least one observation well, and baseline groundwater pressures and water quality data must be obtained from the monitoring wells prior to production.


Data Collection and Notice Procedures

Data collected from the testing and production of CBM wells and groundwater monitoring wells required by the Board of Oil and Gas Conservation will be available to the public and provided to the Montana Bureau of Mines and Geology.

The board will publish notice in accordance with its existing procedures, and, additionally, water right holders on record with the Water Resources Division, DNRC, will receive individual notices of production field development hearings.

Well-Drilling Precautions in Coal Bed Methane Areas

Water well developers and drillers must exercise caution when drilling water wells in or near CBM projects as free methane gas may be encountered in one or more coal beds.

For more information about the controlled groundwater area, call Nancy Andersen, DNRC Water Rights Bureau Chief, (406) 444-6631. For other information about the production of CBM, call Tom Richmond, Administrator, Montana Board of Oil and Gas Conservation, (406) 656-0040. Call DEQ's Water Protection Bureau, at (406) 444-3080, for information about the MPDES permit. 

An Old-Fashioned Montana Winter for 1999-2000

By Jesse Aber

LAST YEAR AT THIS TIME I WROTE AN ARTICLE FOR *WATER LINES* TITLED, "WHAT THIS WINTER MAY BRING." In that piece I traced the demise of the 1997-98 El Niño, which brought us nearly 30 days of over 90-degree temperatures from June to mid-September of 1998, and the emergence of the 1998-99 La Niña event. What can we expect in Montana for the winter of 1999-2000? Are we entering, exiting, or between climate anomalies?

According to the National Climate Prediction Center (CPC) *Diagnostic Advisory* issued October 14, 1999: "At the present, subsurface oceanic conditions continue to reflect the ongoing cold episode with no signs of an evolution toward a pre-warm episode state. Thus, it is likely that cold episode conditions will continue for the next several months." The CPC is telling us that conditions consistent with La Niña events are still in place and growing off the west coast of South America. Those conditions translate into a high degree of confidence that Montana will experience a wetter-than-normal and probably a colder-than-normal winter.

To briefly review the differences between an El Niño and a La Niña, I will quote a piece from the Great Falls Office of the National Weather Service Internet home page, "Miscellaneous" section:

"La Niña and El Niño are extreme phases of a naturally occurring climate cycle referred to as El Niño / Southern Oscillation. Both terms refer to large-scale changes in sea-surface temperature across the eastern tropical Pacific. Changes in the ocean impact the atmosphere and climate patterns around the globe. In turn, changes in the atmosphere impact the ocean temperatures and currents. The system oscillates between warm (El Niño), to neutral, to cold (La Niña) conditions on average every three to five years."

"One important item to remember is La Niña winters are quite variable in Montana. Some have seen above normal temperatures, and some have had below normal snowfall. On balance, it averages out to colder than normal and snowier than normal."

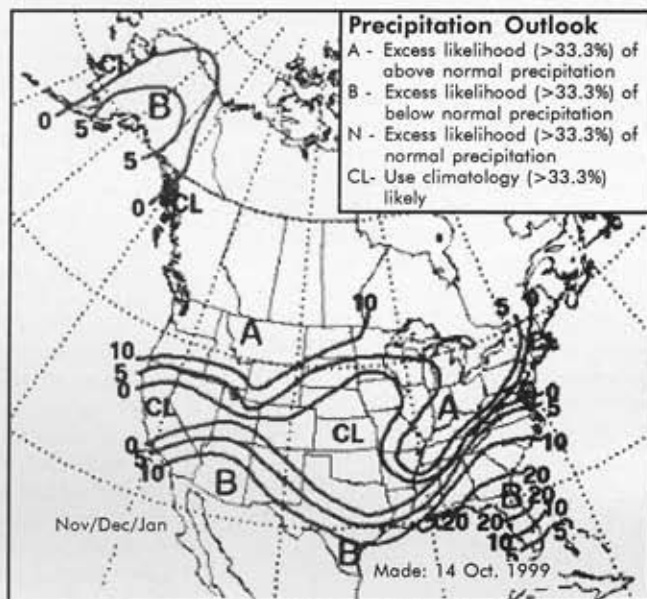
According to National Weather Service Area Manager Ken Mielke, "As it turned out, the 1998-99 winter was quite mild across most of the state and dry in the valleys and across the plains of central Montana. Snowfall in the mountains was normal to above normal and, also, above normal across the north-eastern plains. It was very windy along the east slopes of the divide most of the winter."

"As we approach the 1999-2000 winter, a moderately strong La Niña continues in the equatorial Pacific, and the lingering warmth in the waters of the mid and northern latitudes of the Pacific is long gone. The official winter forecast from the National Weather Service's Climate Prediction Center calls for below normal temperatures east of the divide and above normal precipitation across the state for the upcoming winter. This season will likely be more typical of a Montana winter, unlike the two previous years. We'll see changes and extremes, cold spells followed by warmer periods but, overall, a good chance we'll be a bit colder and snowier than normal by the time we get into the spring months."

At the October 14, 1999, meeting of the Governor's Drought Advisory Committee, Mielke distinguished the La Niña winter of 1998-99 from what he expects in the winter of 1999-2000 by saying, "We're going back to a more normal winter." Recalling the sparse snow in the valleys and plains and the moderate temperatures of 1998, he said, "It's going to be a little different winter." Mielke expects an "old-fashioned winter" in Montana valley towns, in contrast to the "open" winter of 1998-99 when relatively little snow fell below an elevation of 5,500 feet above sea level.

Spring - Summer of 1999

The bright spot for Montana water supply for 1999 was the abundant mountain snowpack west of the Continental Divide which occurred, in part, due to the influence of a powerful jet stream flow



CPC Precipitation Outlook Map.

that put a record snowpack on the Cascade Mountains of Washington before slamming into Montana's Rockies. Even with heavy demand for irrigation water and precipitation one-half of normal or less, streams and rivers west of the divide were average to well above average throughout the summer. East of the divide, however, poor precipitation all spring put pressure on runoff from an average mountain snowpack to provide irrigation water, resulting in some very low streamflow on the Big Hole, Smith, Teton, Dearborn, Shields, and Musselshell rivers.

In conclusion, the prospect of a wet winter is welcome to most Montanans, with a colder winter appealing to somewhat fewer folks. With an undulating jet stream snaking across the state, the winter weather should be far from boring. Fall has arrived in a warm and friendly manner, and no one is complaining about that except some hunters. One look at the CPC Precipitation Outlook Map for November through January, however, indicates that winter could be just around the corner. ☔

Rep. Story Looks for Solutions to Montana Water Issues

Cindy Forgey & Jesse Aber

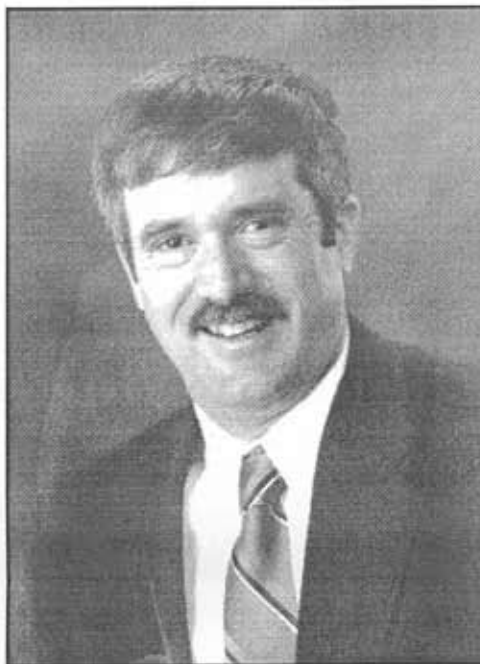
MONTANA STATE REPRESENTATIVE ROBERT STORY, JR., IS A FOURTH GENERATION FARMER/RANCHER WHO OPERATES A DIVERSIFIED LIVESTOCK AND IRRIGATED FARMING OPERATION IN PARK CITY, MONT. Using both sprinkler and flood irrigation systems, his farming operation produces a variety of crops such as alfalfa, corn silage, dry beans, spring wheat, and barley. He has lived on the family ranch all of his life except for the years he spent at Montana State University, where he received a degree in agricultural education. He also spent three years teaching vocational agriculture in Opheim, Mont., in the 1970s.

Rep. Story became involved in water issues at the beginning of the water right adjudication process. He had several water permits that had to be defended against some claims dealing with old water rights. In order to work with the adjudication system, he decided it was better to learn a little about water law and to do most of the objection work himself. This approach worked out as he was able to work through all of his concerns with filed claims and maintain the value of the permits upon which he depended to irrigate.

In the mid 1980s, Rep. Story was elected to the Stillwater Conservation District (CD) Board of Supervisors. While with the CD board, he worked on improving the 310 permitting process, the efficiency of irrigation water use through the use of surge flow devices, and the process of straw-mulching in row crops. He also worked on the neutron probe studies to schedule irrigation. Rep. Story was also involved with the Montana Farm Bureau and Montana Stockgrowers Association, where he spent time working on water policy issues. He was also appointed to two work groups to develop the State Water Plan.

In the early 1990s, he worked through the conservation district to locate livestock producers on nonpoint source (nps) pollution water quality problems resulting from corrals and livestock facilities near creeks. He had a livestock facility himself and could see,

firsthand, the problems that everyone would eventually face. He organized a workshop for several counties in his area to identify typical livestock facility problems and proposed some cost-effective solutions to them.



Representative Robert R. Story.

Involvement in community agricultural activities eventually led him to run for the state legislature. He was elected in 1994 and served three terms in the Montana House of Representatives. He has served on the House Natural Resource Committee and on the Reserved Water Rights Compact Commission.

When asked for his opinion on the most challenging water quality issue facing Montanans today, Rep. Story replied that, other than mine cleanup, it would have to be dealing with nonpoint sources.

"Now that many of the point source problems in Montana have been under scrutiny for the past 25 years, the focus of regulatory agencies and watchdog groups will shift to the non-point source area. The main target will be agriculture and, in particular, livestock confinement facilities. There is, however, a more difficult issue dealing with irrigation water runoff, especially in row-crop areas. This will be harder to deal with because of the acreage involved and the interdependence of water users on the availability of return flows," said Story.

Rep. Story believes that the most challenging water quantity issue will be the conflict between diversionary users and recreational users. He said, "As recreation becomes a larger industry, and more people are making a living from guiding fishermen and operating rafting businesses, there will be more conflict over water levels in some streams. This will not be just a problem in dry years, but in any year as streams become more crowded. There will also be conflicts between traditional recreational users, and those who operate commercial recreation businesses."

Rep. Story believes that, ten years from now, one of the most challenging water-related issues will be "dealing with the changing demands brought on by commercial use of Montana's surface waters for recreation."

Story explains that another challenge in the future will be "upgrading and maintaining municipal wastewater treatment plants to meet changing federal and state regulations" because of the associated costs.

Story mentions a third challenging issue that will affect us in the future. "Endangered species and their management will affect water use in many areas of the state."

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If you prefer to be on our e-mail notification list, rather than our mailing list, please send your e-mail address with a message stating you would like to be notified to: cforgey@state.mt.us.

Employees Recognized at Awards Ceremony

By Cindy Forgey

ON JULY 29, 1999, AN AWARDS CEREMONY WAS HELD IN PIONEER HERITAGE PARK IN HELENA TO RECOGNIZE WATER RESOURCES DIVISION STAFF FOR OUTSTANDING PERFORMANCE AND LONGEVITY.

Special recognition plaques were given to Larry Dolan for his work on the West Crane Irrigation Project Environmental Assessment, to Faye Bergan and Pat Riley for their work on the Crow Compact, and to the Water Rights Bureau for successful completion of the inventorying, bar-coding, and labeling of more than 240,000 files.

Other special recognition certificates were given to Jesse Aber, Paul Azevedo, Tim Bryggman, Marvin Cross, Jim Edgar, Regina Fullerton, Ann Glubczynski, Ann Goetze, Robin Harper, Shaunda Hildebrand, Nancy Hughes, Scott Irvin, Becky Ketchum, Jim Kindle, Bob Larson, Vivian Lighthizer, Julie McNichol, Ron Miller, Kim Overcast, Illa Phillips, Rich Russell, Terry Scow, Tracey Turek, and Mary



Photo by Mandi Shuland

Jack Stults presents awards to recognize Water Resources Division staff.

Ellen Wolfe.

Longevity awards were given to Tim Bryggman, Dolores Eustice, Becky Ketchum, Michele Lemieux, Jim Robinson, Sheri Smith, Cynthia Spethman, and Mike Wherley for 5 years of service; Larry Dolan, Jan Langel, Larry Schock, Terry Scow, Marshall Sewell, Tracey Turek,

Kraig VanVoast and Kirk Wren for 10 years; Jack Stults and Pam Weinmeister for 15 years; Craig Dubois, Jim Gilman, Judy Jeniker and Rusty Taylor for 20 years; and Glen McDonald and Rita Nason for 25 years of service.

Congratulations to Everyone for a Job Well Done! 💧

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1,700 copies of this document were published at a total cost of \$621.80 which includes \$270.00 for printing and \$351.80 for distribution.

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